REMARKS

In the present Amendment, Claim 5 has been amended to further recite a step of --discharging the pulverized inorganic oxide--. This amendment is supported by the amended specification, for example, at page 6, lines 11-15 and page 12, lines 16-17.

No new matter has been added and entry of the Amendment is respectfully requested. Upon entry of the Amendment, Claims 5-10 will be all the claims pending in the application.

Claims 5-10 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hill (U.S. Pat. No. 4,205,964).

Applicants respectfully submit that the amended claims are patentable over Hill for at least the following reasons.

1. Claims 5-8 are patentable over Hill

In the method of the present invention recited in Claim 5, from which Claims 6-8 depend, an inorganic oxide is pulverized in a pulverizr during continuous introduction of the inorganic oxide and a gas into the pulverizer, and the pulverized inorganic oxide and the gas are continuously discharged from the pulverizer.

In contrast, Hill discloses that a process of milling alumina powder in a batch-wise process. In Hill's process, milling is carried out under a condition of high energy consumption in order to bond particles together, and a raw material is placed in a mill and then pulverized.

However, Hill does not disclose or suggest the continuous introduction of raw materials as recited in present Claim 5. Further, Applicants have in the present Amendment amended Claim 5 to explicitly recite that the pulverized inorganic oxide is continuously discharged from the pulverizer. Hill does not disclose or suggest this feature either.

When a raw material is continuously introduced, a condition of high energy consumption would not be established.

2. Claims 9-10 are patentable over Hill

The present invention recited in Claim 9, from which Claim 10 depends, provides a method for producing an alumina powder which comprises a step of pulverizing an aluminum oxide with purity of about 99.9% or higher and a BET specific surface area of from about 1 to about 70 m^2/g in a medium-stirring pulverizer under dry conditions at a specific energy consumption of from about 0.3 to about 1 kWh/kg.

Applicants respectfully submit that a specific energy consumption of the process disclosed in Hill is outside the presently claimed range for the following reasons:

(1) It is described in Hill that "The shaft speed was 283 rpm and milling was conducted for 6 hours. For the fixed charge of balls, the energy level was calculated to be roughly $3.7x10^7$ ergs per sec. per gm of powder (col. 9, lines 2-5).

Hill further describes that "The resulting alumina product powder particles were quite satisfactory as evident from microstructural analysis and the following characteristics were noted: ...a microstrain of 0.5%" (col. 9, lines 6-11, Example VI).

A specific energy consumption of this process is calculated below:

pulverizing time: 6 hours

power: $3.7x10^7$ ergs/sec (=$3.7x10^{-3}$ kW); 1 erg/sec=10^{-10} kW

weight of powder: 1g (=10^{-3} kg)

A specific energy consumption = power x pulverizing time ÷ weight of powder

= 3.7 x 10^{-3} kW x 6 hours ÷ 10^{-3} kg = 22.2 kWh/kg

(2) Hill also describes that "Using the 10 horsepower, 4-S Szegvari attritor of Example VI at 283 rpm and approximately 8100 5/16" steel, 2 kg of Reynolds RC-172 alumina powder was high energy milled for eight hours at a ball-to-powder ratio of 18:1 (by weight)" (col. 9 lines 14-18).

Hill continues that "Microstructural analysis revealed the powder to have processed quite satisfactorily with the following characteristic noted: ...microstrain, 0.465%" (col. 9 lines 27-32, Example VII).

A specific energy consumption of this process is calculated below:

pulverizing time: 8 hours

power: 10 horsepower (=7.46 kW); 1 horsepower=0.746 kW

weight of powder: 2 kg

A specific energy consumption = power x pulverizing time ÷ weight of powder

= 7.46 kW x 8 hours ÷ 2 kg = 29.8 kWh/kg

In other Examples of Hill, parameters required to calculate a specific energy consumption are not all explicitly described. However, Hill describes that the alumina product powder particles obtained in the other Examples (such as Example I) has similar microstrain to those of Examples VI or VII (col. 5 lines 49-52, especially "90 minute;" and TABLE I, especially "90 mins. Spex-milled: Strain: 0.5%").

Since a microstrain of the milled alumina powder is related to pulverizing time (see TABLE 1), it is reasonable to state that a specific energy consumption in Example I is the same as Example VI or VII in Hill. Accordingly, a specific energy consumption in the other Examples of Hill must be rather high, not be 1 kWh/kg or less.

As above-described, in the process disclosed by Hill, milling is carried out under conditions of a high-energy consumption, such as 20 kWh/kg, or more in order to bond particles together.

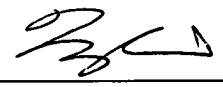
That is, Hill does not teach or fairly suggest the present invention recited in Claim 9, which comprises a step of pulverizing an aluminum oxide at a low specific energy consumption such as 1 kWh/kg or less.

In view of the foregoing, Applicants respectfully submit that the present invention is not obvious over Hill and the rejection should be withdrawn.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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